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EXAMINER
MILORD, MARCEAU

ART UNIT	PAPER NUMBER
2682	

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Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	Applicant(s)	
		09/692,661	RAEL ET AL.	
Office Action Summary		Examiner	Art Unit	
		Marceau Milord	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 October 2000* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-93* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-93* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 October 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6* .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or
> described as set forth in section 102 of this title, if the differences between the subject
> matter sought to be patented and the prior art are such that the subject matter as a whole
> would have been obvious at the time the invention was made to a person having ordinary
> skill in the art to which said subject matter pertains. Patentability shall not be negatived
> by the manner in which the invention was made.

2.   Claims 1-8, 15-22, 29-30, 35-42, 48-93 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Brown et al (US Patent No 6366622 B1) in view of Reeser et al (US Patent

No 5856763).

Regarding claim 1, Brown et al discloses an oscillator (116 of fig. 4; 208 of fig. 5 or 248

of fig. 6), comprising: a first resonator having a first tuning input to tune the first resonator as a

function of a first current applied to the first tuning input (col. 8, lines 8-36; col. 10, lines 12-50);

and a second resonator coupled to the first resonator (fig. 6; col. 11, lines 29-60; col. 15, line 47-

col. 16, line 8; col. 17, lines 5-53; col. 31, lines 1-25).

However, Brown et al does not specifically disclose the feature of a second resonator

having a second tuning input to tune the second resonator as a function of a second current

applied to the second tuning input.

On the other hand, Reeser et al, from the same field of endeavor, discloses a voltage-

controlled oscillator operable on two widely separated frequency bands. The two operable

frequency modes are controlled by changing base bias voltages on at least two transistors with

commonly connected emitters. A base circuit of each transistor is connected to an independent

resonator and tuning element and shares a common feedback reactance. Furthermore, Reeser

shows in figure 1, two bases 14 and 16 that are coupled with respective first and second

resonators 26, 28, which are designed to resonate at a predetermined frequency. Each resonator

26, 28 are operable at a different frequency band. The resonator 28 also includes a voltage

variable reactance element such as a varactor 32 which, during operation of the oscillator, is used

to tune the resonator to particular frequency channels within the operable frequency bands (col.

2, line 59- col. 3, line 50; col. 7, line 43- col. 8, line14). Therefore, it would have been obvious to

one of ordinary skill in the art at the time the invention was made to apply the technique of

Reeser to the system of Brown in order to vary the resonance frequency of the resonators and the

strength of their coupling.

Claims 2-4 contain similar limitations addressed in claim 1, and therefore are rejected

under a similar rationale.

Regarding claim 5, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of

fig. 5 or 248 of fig. 6), comprising a first transconductance cell positioned between the output of

the first resonator and the second tuning input, and a second transconductance cell positioned

between the output of the second resonator and the first tuning input (col. 17, lines 5-53; col. 20,

lines 19-40; col. 31, line 1- col. 32, line 11).

Regarding claim 6, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of

fig. 5 or 248 of fig. 6), wherein the first transconductance cell has a digitally programmable

variable gain (col. 24, lines 33-67).

Regarding claim 7, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of fig. 5 or 248 of fig. 6), wherein the second transconductance cell has a digitally programmable variable gain (col. 30, line 36- col. 31, line 66).

Regarding claim 8, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of fig. 5 or 248 of fig. 6), wherein the output of the first resonator is fed back to the first tuning input, and the output of the second resonator is fed back to the second tuning input col. 20, lines 19-40; col. 31, line 1- col. 32, line 11).

Regarding claims 15, 19, 22, Brown et al discloses an oscillator (116 of fig. 4; 208 of fig. 5 or 248 of fig. 6), comprising: a first resonator (fig. 6) having a first tuning input; a second resonator coupled to the first resonator, the second resonator having a second tuning input (col. 8, lines 8-36; col. 10, lines 12-50); first control means for controlling a first current applied to the first resonator to tune the first resonator (fig. 6; col. 11, lines 29-60; col. 15, line 47- col. 16, line 8; col. 17, lines 5-53; col. 31, lines 1-25).

However, Brown et al does not specifically disclose the feature of a second control means for controlling a second current applied to the second resonator to tune the second resonator.

On the other hand, Reeser et al, from the same field of endeavor, discloses a voltage-controlled oscillator operable on two widely separated frequency bands. The two operable frequency modes are controlled by changing base bias voltages on at least two transistors with commonly connected emitters. A base circuit of each transistor is connected to an independent resonator and tuning element and shares a common feedback reactance. Furthermore, Reeser shows in figure 1, two bases 14 and 16 that are coupled with respective first and second resonators 26, 28, which are designed to resonate at a predetermined frequency. Each resonator

26, 28 are operable at a different frequency band. The resonator 28 also includes a voltage

variable reactance element such as a varactor 32 which, during operation of the oscillator, is used

to tune the resonator to particular frequency channels within the operable frequency bands (col.

2, line 59- col. 3, line 50; col. 7, line 43- col. 8, line14). Therefore, it would have been obvious to

one of ordinary skill in the art at the time the invention was made to apply the technique of

Reeser to the system of Brown in order to vary the resonance frequency of the resonators and the

strength of their coupling.

Claims 16-18 contain similar limitations addressed in claim 15, and therefore are rejected

under a similar rationale.

Regarding claim 20, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of

fig. 5 or 248 of fig. 6), wherein the first transconductance cell comprises first programming

means for digitally programming gain (col. 24, lines 33-67).

Regarding claim 21, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of

fig. 5 or 248 of fig. 6), wherein the second transconductance cell comprises second

programming means for digitally programming gain (col. 30, line 36- col. 31, line 66).

Regarding claims 29-34, Brown et al discloses an oscillator (116 of fig. 4; 208 of fig. 5 or

248 of fig. 6), comprising: a first resonator (fig. 6) having a first tuning input and a first output

(col. 8, lines 8-36; col. 10, lines 12-50); a second resonator having a second tuning input and a

second output; a first transconductance cell coupled between the first output and the second

tuning input; a second transconductance cell coupled between the second output and the first

tuning input; a third transconductance cell coupled between the first output and the first tuning

input; and a fourth transconductance cell coupled between the second output and the second

tuning input (fig. 6; col. 11, lines 29-60; col. 15, line 47- col. 16, line 8; col. 17, lines 5-53; col. 31, lines 1-25).

However, Brown et al does not specifically disclose the feature of a second resonator having a second tuning input and a second output.

On the other hand, Reeser et al, from the same field of endeavor, discloses a voltage-controlled oscillator operable on two widely separated frequency bands. The two operable frequency modes are controlled by changing base bias voltages on at least two transistors with commonly connected emitters. A base circuit of each transistor is connected to an independent resonator and tuning element and shares a common feedback reactance. Furthermore, Reeser shows in figure 1, two bases 14 and 16 that are coupled with respective first and second resonators 26, 28, which are designed to resonate at a predetermined frequency. Each resonator 26, 28 are operable at a different frequency band. The resonator 28 also includes a voltage variable reactance element such as a varactor 32 which, during operation of the oscillator, is used to tune the resonator to particular frequency channels within the operable frequency bands (col. 2, line 59- col. 3, line 50; col. 7, line 43- col. 8, line14). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Reeser to the system of Brown in order to vary the resonance frequency of the resonators and the strength of their coupling.

Regarding claims 35-38, Brown et al discloses a transceiver (figs. 4-6), comprising: a current controlled oscillator including a first resonator having a first tuning input to tune the first resonator as a function of a first current applied to the first tuning input (col. 8, lines 8-36; col. 10, lines 12-50); and a second resonator coupled to the first resonator; and a controller having a

first control to control the first current to the first tuning input, and a second control to control

the second current to the second tuning input (fig. 6; col. 11, lines 29-60; col. 15, line 47- col. 16,

line 8; col. 17, lines 5-53; col. 31, lines 1-25).

However, Brown et al does not specifically disclose the feature of a second resonator

having a second tuning input to tune the second resonator as a function of a second current

applied to the second tuning input.

On the other hand, Reeser et al, from the same field of endeavor, discloses a voltage-

controlled oscillator operable on two widely separated frequency bands. The two operable

frequency modes are controlled by changing base bias voltages on at least two transistors with

commonly connected emitters. A base circuit of each transistor is connected to an independent

resonator and tuning element and shares a common feedback reactance. Furthermore, Reeser

shows in figure 1, two bases 14 and 16 that are coupled with respective first and second

resonators 26, 28, which are designed to resonate at a predetermined frequency. Each resonator

26, 28 are operable at a different frequency band. The resonator 28 also includes a voltage

variable reactance element such as a varactor 32 which, during operation of the oscillator, is used

to tune the resonator to particular frequency channels within the operable frequency bands (col.

2, line 59- col. 3, line 50; col. 7, line 43- col. 8, line14). Therefore, it would have been obvious to

one of ordinary skill in the art at the time the invention was made to apply the technique of

Reeser to the system of Brown in order to vary the resonance frequency of the resonators and the

strength of their coupling.

Regarding claim 39, Brown et al as modified discloses a transceiver (figs. 4-6), wherein

the current controlled oscillator comprises a first transconductance cell positioned between the

first resonator output and the second tuning input, and a second transconductance cell positioned

between the second resonator output and the first tuning input (col. 17, lines 5-53; col. 20, lines

19-40; col. 31, line 1- col. 32, line 11).

Regarding claim 40, Brown et al as modified discloses a transceiver (figs. 4-6); wherein

the first transconductance cell has a digitally programmable variable gain (col. 24, lines 33-67).

Regarding claim 41, Brown et al as modified discloses a transceiver (figs. 4-6); wherein

the second transconductance cell has a digitally programmable variable gain (col. 30, line 36-

col. 31, line 66).

Claim 42 contains similar limitations addressed in claim 35, and therefore is rejected

under a similar rationale.

Regarding claims 48-56, Brown et al discloses a method of tuning an oscillator,

comprising: converting an output of a first resonator to a first current; tuning a first resonator as a

function of the second current (fig. 6; col. 11, lines 29-60; col. 15, line 47- col. 16, line 8; col. 17,

lines 5-53; col. 31, lines 1-25).

However, Brown et al does not specifically disclose the steps of converting an output of a

second resonator to a second current; and tuning the second resonator as a function of the first

current.

On the other hand, Reeser et al, from the same field of endeavor, discloses a voltage-

controlled oscillator operable on two widely separated frequency bands. The two operable

frequency modes are controlled by changing base bias voltages on at least two transistors with

commonly connected emitters. A base circuit of each transistor is connected to an independent

resonator and tuning element and shares a common feedback reactance. Furthermore, Reeser

shows in figure 1, two bases 14 and 16 that are coupled with respective first and second

resonators 26, 28, which are designed to resonate at a predetermined frequency. Each resonator

26, 28 are operable at a different frequency band. The resonator 28 also includes a voltage

variable reactance element such as a varactor 32 which, during operation of the oscillator, is used

to tune the resonator to particular frequency channels within the operable frequency bands (col.

2, line 59- col. 3, line 50; col. 7, line 43- col. 8, line14). Therefore, it would have been obvious to

one of ordinary skill in the art at the time the invention was made to apply the technique of

Reeser to the system of Brown in order to vary the resonance frequency of the resonators and the

strength of their coupling.

Regarding claims 57-63, Brown et al discloses a method of tuning an oscillator having a

tuning range over a tuning frequency (col. 10, lines 17-50), the tuning frequency being divided

into a plurality of frequency bands, the method comprising: generating a first digital word (col.

11, line 29- col. 12, line 58); selecting one of the frequency bands with the first digital word;

generating a second digital word; and tuning the oscillator to an operating frequency within the

selected frequency bands with the second digital word (col. 15, line 47- col. 16, line 8; col. 16,

line 62- col. 17, line 53; col. 31, lines 1-66).

However, Brown et al does not specifically disclose the feature of a second resonator

having a second tuning input, a second resonator output, and feedback the second resonator

output to the second tuning input as a function of the first digital word.

On the other hand, Reeser et al, from the same field of endeavor, discloses a voltage-

controlled oscillator operable on two widely separated frequency bands. The two operable

frequency modes are controlled by changing base bias voltages on at least two transistors with

commonly connected emitters. A base circuit of each transistor is connected to an independent resonator and tuning element and shares a common feedback reactance. Furthermore, Reeser shows in figure 1, two bases 14 and 16 that are coupled with respective first and second resonators 26, 28, which are designed to resonate at a predetermined frequency. Each resonator 26, 28 are operable at a different frequency band. The resonator 28 also includes a voltage variable reactance element such as a varactor 32 which, during operation of the oscillator, is used to tune the resonator to particular frequency channels within the operable frequency bands (col. 2, line 59- col. 3, line 50; col. 7, line 43- col. 8, line14). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Reeser to the system of Brown in order to vary the resonance frequency of the resonators and the strength of their coupling.

Claims 64-75 are similar in scope to claims 57-63;and therefore are rejected under a similar rationale.

Regarding claims 76-80, 87-88, Brown et al discloses an oscillator (116 of fig. 4; 208 of fig. 5 or 248 of fig. 6), having a tuning range over a tuning frequency, the tuning frequency being divided into a plurality of frequency bands (col. 10, lines 17-50), the oscillator comprising: selection means for selecting one of the frequency bands as a function of a first digital word (col. 11, line 29- col. 12, line 58); and tuning means for tuning the oscillator to an operating frequency within the selected frequency bands as a function of a second digital word (col. 15, line 47- col. 16, line 8; col. 16, line 62- col. 17, line 53; col. 31, lines 1-66).

However, Brown et al does not specifically disclose the feature of a second resonator

having a second tuning input to tune the second resonator as a function of a second current

applied to the second tuning input.

On the other hand, Reeser et al, from the same field of endeavor, discloses a voltage-

controlled oscillator operable on two widely separated frequency bands. The two operable

frequency modes are controlled by changing base bias voltages on at least two transistors with

commonly connected emitters. A base circuit of each transistor is connected to an independent

resonator and tuning element and shares a common feedback reactance. Furthermore, Reeser

shows in figure 1, two bases 14 and 16 that are coupled with respective first and second

resonators 26, 28, which are designed to resonate at a predetermined frequency. Each resonator

26, 28 are operable at a different frequency band. The resonator 28 also includes a voltage

variable reactance element such as a varactor 32 which, during operation of the oscillator, is used

to tune the resonator to particular frequency channels within the operable frequency bands (col.

2, line 59- col. 3, line 50; col. 7, line 43- col. 8, line14). Therefore, it would have been obvious to

one of ordinary skill in the art at the time the invention was made to apply the technique of

Reeser to the system of Brown in order to vary the resonance frequency of the resonators and the

strength of their coupling.

Regarding claim 81, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of

fig. 5 or 248 of fig. 6), wherein the tuning means comprises a first transconductance cell to feed

back the output of the second resonator to the first tuning input, and a second transconductance

to feed back the output of the first resonator to the second tuning input (col. 17, lines 5-53; col.

20, lines 19-40; col. 31, line 1- col. 32, line 11).

Regarding claim 82, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of fig. 5 or 248 of fig. 6), wherein the first transconductance cell comprises first programming means for digitally programming gain in response to the second digital word (col. 24, lines 33-67).

Regarding claim 83, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of fig. 5 or 248 of fig. 6), wherein the second transconductance cell comprises second programming means for digitally programming gain in response to the second digital word (col. 30, line 36-col. 31, line 66).

Regarding claim 84, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of fig. 5 or 248 of fig. 6), wherein the first and second programming means each comprises a current source (col. 11, lines 29-41; col. 30, lines 15-65).

Regarding claim 85, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of fig. 5 or 248 of fig. 6), wherein the second digital word associated with the first programming means is different from the second digital word associated with the second programming means (col. 30, lines 15-65).

Regarding claim 86, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of fig. 5 or 248 of fig. 6), wherein the second digital word associated with the first programming means is the same as the second digital word associated with the second programming means (col. 30, lines 15-65).

Regarding claim 89, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of fig. 5 or 248 of fig. 6), wherein the first transconductance cell comprises first programming means for digitally programming gain in response to the first digital word (col. 24, lines 33-67).

Regarding claim 90, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of

fig. 5 or 248 of fig. 6), wherein the second transconductance cell comprises second

Programming means for digitally programming gain in response to the first digital word (col. 30,

line 36- col. 31, line 66).

Regarding claim 91, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of

fig. 5 or 248 of fig. 6), wherein the first and second programming means each comprises a

current source (col. 11, lines 29-41; col. 30, lines 15-65).

Regarding claim 92, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of

fig. 5 or 248 of fig. 6), wherein the first digital word associated with the first programming

means is different from the first digital word associated with the second programming means

(col. 30, line 36- col. 31, line 66).

Regarding claim 93, Brown et al as modified discloses an oscillator (116 of fig. 4; 208 of

fig. 5 or 248 of fig. 6), wherein the first digital word associated with the first programming

means is the same as the first digital word associated with the second programming means (col.

30, lines 14-49; col. 24, lines 33-67).

3.   Claims 9-14, 23-28, 31-34, 43-47 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Brown et al (US Patent No 6366622 B1) in view of Reeser et al (US Patent

No 5856763) as applied to claims 1, 15, 35 above, and further in view of Kerth et al (US Patent

No 6148048).

Regarding claims 9-14, Brown and Reeser disclose everything claimed as explained

above except the features of a third transconductance cell comprises a third gain control input

responsive to a third digital word to program a gain thereof, and the fourth transconductance cell

comprises a fourth gain control input responsive to a fourth digital word to program a gain

thereof.

However, Kerth et al discloses a receive path implementation for an intermediate

frequency transceiver that provides increased signal processing integrity and accuracy.

Furthermore, Kerth et al shows in figure 9, an amplifier 820, which includes a first gain stage

902 having a transconductance gm1, and a second gain stage 904 having a transconductance

gm2. The feedback impedance 822 is implemented with feedback capacitance 914. Note that,

this circuit can have a plurality of transconductance (figs. 1-4; col. 3, line 12- col. 4, line 61; col.

8, lines 24- col. 8, line 58; col. 9, line 48- col. 10, line 65). Therefore, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to apply the

technique Kerth to the modified system of Brown and Reeser in order to include a voltage

controlled oscillator in the system which can provide a separate feedback signal operable at both

desired frequency bands to a phase detector via a first divider.

Regarding claims 23-28, Brown and Reeser disclose everything claimed as explained

above except the features of a the third transconductance cell comprises a third programming

means for programming a gain thereof in response to a third digital word, and the fourth

transconductance cell comprises a fourth programming means for programming the gain thereof

in response to a fourth digital word.

However, Kerth et al discloses a receive path implementation for an intermediate

frequency transceiver that provides increased signal processing integrity and accuracy.

Furthermore, Kerth et al shows in figure 9, an amplifier 820, which includes a first gain stage

902 having a transconductance gm1, and a second gain stage 904 having a transconductance

gm2. The feedback impedance 822 is implemented with feedback capacitance 914. Note that, this circuit can have a plurality of transconductance (figs. 1-4; col. 3, line 12- col. 4, line 61; col. 8, lines 24- col. 8, line 58; col. 9, line 48- col. 10, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Kerth to the modified system of Brown and Reeser in order to include a voltage controlled oscillator in the system which can provide a separate feedback signal operable at both desired frequency bands to a phase detector via a first divider.

Regarding claims 31-34, Brown and Reeser disclose everything claimed as explained above except the features of a third transconductance cell comprises a third gain control input responsive to a third digital word to program a gain thereof, and the fourth transconductance cell comprises a fourth gain control input responsive to a fourth digital word to program a gain thereof.

However, Kerth et al discloses a receive path implementation for an intermediate frequency transceiver that provides increased signal processing integrity and accuracy. Furthermore, Kerth et al shows in figure 9, an amplifier 820, which includes a first gain stage 902 having a transconductance gm1, and a second gain stage 904 having a transconductance gm2. The feedback impedance 822 is implemented with feedback capacitance 914. Note that, this circuit can have a plurality of transconductance (figs. 1-4; col. 3, line 12- col. 4, line 61; col. 8, lines 24- col. 8, line 58; col. 9, line 48- col. 10, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique Kerth to the modified system of Brown and Reeser in order to include a voltage

controlled oscillator in the system which can provide a separate feedback signal operable at both

desired frequency bands to a phase detector via a first divider.

Regarding claims 43-47, Brown and Reeser disclose everything claimed as explained

above except the features of a third transconductance cell comprises a third gain control input

responsive to a third digital word to program a gain thereof, and the fourth transconductance cell

comprises a fourth gain control input responsive to a fourth digital word to program a gain

thereof.

However, Kerth et al discloses a receive path implementation for an intermediate

frequency transceiver that provides increased signal processing integrity and accuracy.

Furthermore, Kerth et al shows in figure 9, an amplifier 820, which includes a first gain stage

902 having a transconductance gm1, and a second gain stage 904 having a transconductance

gm2. The feedback impedance 822 is implemented with feedback capacitance 914. Note that,

this circuit can have a plurality of transconductance (figs. 1-4; col. 3, line 12- col. 4, line 61; col.

8, lines 24- col. 8, line 58; col. 9, line 48- col. 10, line 65). Therefore, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to apply the

technique Kerth to the modified system of Brown and Reeser in order to include a voltage

controlled oscillator in the system which can provide a separate feedback signal operable at both

desired frequency bands to a phase detector via a first divider.

Conclusion

4.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Reeser et al US Patent No 6011959 discloses a dual band voltage controlled oscillators that incorporate a combiner circuit with a single output operable at two widely separated frequency bands.

Adachi et al US Patent No 5987309 discloses a transceiver circuit with a heterodyne receiver circuit.

Lichterield US Patent No 6046650 discloses a voltage controlled oscillator circuit having a modulation input port for receiving a modulation input signal through modulation circuit.

Geddes et al US Patent No 5263198 discloses a mixer that includes a local oscillator matching network having an LO input port, an RF matching network also having an input port and an IF filter which provides an IF output from the mixer.
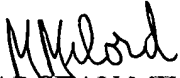
Lee et al US Patent No 6285866 B1 discloses a single-chip radio structure with a piezoelectric crystal device integrated on a monolithic integrated circuit.

Tham et al US Patent No 6049702 discloses an integrated passive transceiver section.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 703-306-3023. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

MARCEAU MILORD   Marceau Milord

Examiner
Art Unit 2682